

CLAIMS

1. An active matrix electroluminescent display device comprising an array of display pixels, each pixel comprising:
 - 5 an electroluminescent (EL) display element (2);
 - a drive transistor (22) for driving a current through the display element (2);
 - 10 an address transistor (16) for providing a pixel drive signal from a data line to the gate of the drive transistor (22); and
 - 15 a shorting transistor (30) connected between the gate and drain of the drive transistor,
wherein the display device further comprises means (42) for measuring a voltage on the data line.
- 15 2. A device as claimed in claim 1, wherein the EL display element (2) and the drive transistor (22) are connected in series between first (26) and second (34) power lines.
- 20 3. A device as claimed in claim 2, wherein the voltage on the second power line (34) is switchable between two values, one of which causes the EL display element (2) to be turned off.
- 25 4. A device as claimed in any preceding claim, wherein the data input line (6) is switchable between a voltage driving mode in which it provides voltages to the pixels connected to the line and a floating mode in which it can float to the voltage of the gate of the drive transistor of an addressed pixel.
5. A device as claimed in any preceding claim, wherein each pixel is operable in two modes:
 - 30 a first, threshold voltage measuring mode, in which the display element is disabled, the address transistor is turned on and the shorting transistor is turned on; and

a second, pixel drive mode, in which the display element is enabled, the address transistor is turned on and the shorting transistor is turned off.

6. A device as claimed in claim 5, wherein during the first, threshold voltage measuring mode, during a first period (40) a predetermined voltage is applied to the data line so that a current is driven through the drive transistor (22) and during a second period (42) the data line is allowed to float so that the voltage on the data line (6) substantially follows the gate voltage of the drive transistor (22).

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7. A device as claimed in any preceding claim, wherein the drive transistor (22) is a polysilicon TFT.

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8. A device as claimed in claim 7, wherein the drive transistor (22) is a low temperature polysilicon TFT.

9. A device as claimed in any preceding claim, further comprising a storage capacitor (24) between the gate and source of the drive transistor (22).

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10. A method of addressing the pixels of an active matrix electroluminescent display device, comprising an electroluminescent (EL) display element (2) and a drive transistor (22) for driving a current through the display element (2), the method comprising:

disabling the display element (2);

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applying a first voltage to a data line (6);

driving a current through the drive transistor (22), through a shorting transistor (30) connected between the gate and drain of the drive transistor and through an address transistor (16) connected between the gate of the drive transistor and the data line (6);

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allowing the data line (6) electrically to float;

measuring a voltage on the data line (6); and

modifying a data voltage to be applied to the drive transistor (22) using the voltage measured on the data line.

11. A method as claimed in claim 10, wherein disabling the display element
5 comprising applying a disable voltage to a terminal of the display element.

12. A method as claimed in claim 11, wherein disabling the display element comprising applying a disable voltage to terminal (34) of the display element (2) which is common to all display elements.

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13. A method as claimed in any one of claims 10 to 12, further comprising enabling the display element (2), and addressing the pixel with the modified data voltage on the data line, with the shorting transistor turned off.